REMARKS

Claims 1-38 are pending and are rejected. Claims 1-4, 7, 12, 14-15, 22-23, and 25 are amended. Claim 24 is canceled. Reconsideration and allowance of Claims 1-23 and 25-38 are respectfully requested.

Amendments to Specification

Applicant amends the specification to correct clerical errors. No new matter is introduced.

Claim Rejections

Claims 1, 9-10, 22-26, 31-32, 35, and 38 are rejected under 35 USC §102(b) as being anticipated by Blake et al, "An Architecture for Differentiated Services," RFC 2475, December 1998, hereinafter referred to as Blake.

Claims 12-21 and 36-37 are rejected under 35 USC §102(b) as being anticipated by Ohgane (USP 5,875,173).

Claims 2-8, 27-30, and 33-34 are rejected under 35 USC §103(a) as being unpatentable over Blake in view of Ohgane.

Applicant has amended the claims, and discusses the patentability of the amended independent claims over the cited references individually below.

Independent Claim 1

Applicant's Claim 1 (as amended) recites:

A traffic management processor for processing a plurality of different traffic flows on a per-flow basis, each traffic flow including any number of packets each transmitted from the same source address to the same destination address and each packet including a flow identification (ID) indicating to which traffic flow the packet belongs, comprising:

means for tracking each packet according to its flow ID, wherein the means for tracking comprises a content addressable memory (CAM) device having a plurality of rows, each for storing the flow ID and a most recently received bit for a corresponding

packet, wherein the most recently received bit indicates whether the corresponding packet is the most recently received packet for its traffic flow; and

means for scheduling each packet according to its flow ID.

Independent Claim 1 is neither anticipated by nor obvious over Blake or Ohgane, whether taken individually or in combination.

First, none of the cited references disclose or teach processing individual traffic flows according to a flow ID that indicates which individual traffic flow a packet belongs to. More specifically, none of the cited references disclose or suggest a packet that includes a flow ID indicating which individual traffic flow the packet belongs to, as recited in Applicant's Claim 1.

Blake discloses a traffic routing architecture that processes ***aggregated*** traffic flows according to traffic ***type*** by applying different per-hop behaviors to different traffic ***class types***.[1] More specifically, Blake uses the DS codepoint in the packet header to select which per-hop behavior to apply to the packet, and therefore the DS codepoint indicates the packet's traffic class type.

In contrast, Applicant's Claim 1 recites a traffic management processor that processes different traffic flows on a ***per-flow basis***. More specifically, the processor of Applicant's Claim 1 uses a flow ID to indicate which traffic flow each packet belongs to, where a traffic flow includes any number of packets each transmitted from the same source address to the same destination address. Thus, while Blake processes traffic aggregates according to traffic type as indicated by the DS codepoint, Applicant's Claim 1 processes individual traffic flows as indicated by flow ID values. As a result, the processor of Applicant's Claim 1 can process traffic in a more fine-tuned manner than conventional techniques such as Blake.

Second, none of the cited references disclose or teach "a content addressable memory (CAM) device having a plurality of rows, each for storing the flow ID for a corresponding packet," as recited in Applicant's Claim 1.

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1 See Blake, page 3, second paragraph.

Ohgane's CAM device 51 stores only departure times;[2] there is no language in Ohgane that discloses or suggests a CAM device that stores a flow ID in each row, as recited in Applicant's Claim 1. Indeed, Ohgane does not disclose or suggest a packet having a flow ID that indicates which traffic flow the packets belongs to, and therefore cannot disclose or suggest a CAM device that stores a flow ID for a corresponding packet in each row of the CAM device.

Further, there is no language in Ohgane that discloses or teaches that each row of the CAM device stores "a most recently received bit for a corresponding packet, wherein the most recently received bit indicates whether the corresponding packet is the most recently received packet for its traffic flow," as recited in Applicant's Claim 1.

Accordingly, because none of the cited references, whether taken alone or in combination, disclose or suggest a traffic management processor for "processing a plurality of different traffic flows on a per-flow basis, each traffic flow including any number of packets each transmitted from the same source address to the same destination address and each packet including a flow identification (ID) indicating to which traffic flow the packet belongs" and a CAM device "having a plurality of rows, each for storing the flow ID and a most recently received bit for a corresponding packet," as recited in Applicant's Claim 1, Claim 1 is patentable over the cited references.

Claims 2-11 and 35 depend from Claim 1 and therefore distinguish over the cited references for at least the same reasons as Claim 1.

Independent Claim 12

Applicant's Claim 12 (as amended) recites:

A traffic management processor for managing a number of traffic flows each including one or more packets, wherein the packets of each flow are transmitted from the same source address to the same destination address, comprising:

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2 Ohgane states at col. 8, lines 15-21: "a time value (T) representing a transmission timing for a virtual channel VC to be used next is written in a cell array of the CAM cell array section 511. When this time value (T) matches with a value identified by the counter 50, an address where this time value (T) is stored can be determined as a virtual channel VC for the next cell to be transmitted."

a content addressable memory (CAM) device having a plurality of rows, each row for storing a flow identification (ID) and a most recently received bit for a corresponding packet, wherein the flow ID indicates to which traffic flow the packet belongs and wherein the most recently received bit indicates whether the corresponding packet is the most recently received packet for its traffic flow;

a departure time table including a plurality of rows, each coupled to a corresponding row of the CAM device and configured to store a departure time for the corresponding packet; and

compare logic having inputs coupled to corresponding rows of the departure time table, the compare logic for comparing the departure times with each other to determine which departure time is the earliest.

Independent Claim 12 is neither anticipated by nor obvious over Blake or Ohgane, whether taken individually or in combination.

First, as discussed above with respect to Claim 1, none of the cited references disclose or teach processing individual traffic flows according to a flow ID that indicates which individual traffic flow a packet belongs to. More specifically, none of the cited references disclose or suggest a packet that includes a flow ID indicating which individual traffic flow the packet belongs to, as recited in Applicant's Claim 12. For example, while Blake processes traffic aggregates according to traffic type as indicated by the DS codepoint, the processor of Applicant's Claim 12 processes individual traffic flows including packets transmitted from the same source address to the same destination address as indicated by flow ID values. As a result, the processor of Applicant's Claim 12 can process traffic in a more fine-tuned manner than conventional techniques such as Blake.

Second, as discussed above with respect to Claim 1, none of the cited references disclose or teach "a content addressable memory (CAM) device having a plurality of rows, each for storing the flow ID and a most recently received bit for a corresponding packet," as recited in Applicant's Claim 12. For example, Ohgane does not disclose or suggest a packet having a flow ID that indicates which traffic flow the packets belongs to, and therefore cannot disclose or suggest a CAM device that

stores a flow ID for a corresponding packet in each row of the CAM device. Similarly, there is no language in Ohgane that discloses or suggests a CAM device that stores most recently received bits for packets, as recited in Applicant's Claim 12.

Therefore, Claim 12 is patentable over the cited references.

Claims 13-21 and 36-37 depend from Claim 12 and therefore distinguish over the cited references for at least the same reasons as Claim 12.

Independent Claim 22

Applicant's Claim 22 (as amended) recites:

A method for processing a number of different traffic flows on a per-flow basis, each traffic flow including one or more packets transmitted from the same source address to the same destination address, comprising:

receiving an incoming packet, wherein the incoming packet includes a flow identification (ID) indicating to which traffic flow the incoming packet belongs;

comparing the flow ID of the incoming packet with the flow ID's of previously queued packets using a content addressable memory (CAM) device configured to store the flow ID's for corresponding packets;

selectively asserting a match flag in response to the comparing; and

scheduling the incoming packet for departure according to which traffic flow the packet belongs.

Independent Claim 22 is neither anticipated by nor obvious over Blake or Ohgane, whether taken individually or in combination.

First, as discussed above with respect to Claim 1, none of the cited references disclose or teach processing individual traffic flows according to a flow ID that indicates which individual traffic flow a packet belongs to. More specifically, none of the cited references disclose or suggest "receiving an incoming packet, wherein the incoming packet includes a flow identification (ID) indicating to which traffic flow the incoming packet belongs," as recited in Applicant's Claim 22.

Second, as discussed above with respect to Claim 1, none of the cited references disclose or teach "comparing the flow ID of the incoming packet with the

flow ID's of previously queued packets using a content addressable memory (CAM) device configured to store the flow ID's for corresponding packets," as recited in Applicant's Claim 22.

Therefore, Claim 22 is patentable over the cited references.

Claims 23 and 25-34 and 38 depend from Claim 22 and therefore distinguish over the cited references for at least the same reasons as Claim 22.

CONCLUSION

In light of the above remarks, it is believed that Claims 1-23 and 25-38 are in condition for allowance and, therefore, a Notice of Allowance of 1-23 and 25-38 is respectfully requested. If the Examiner's next action is other than allowance as requested, the Examiner is requested to call the undersigned at (408) 236-6646.

Respectfully submitted,

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Dated

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